N° 10,667 A.D. 1894

*Date of Application, 1st June, 1894*

*Complete Specification Left, 7th Dec., 1894—Accepted, 19th Jan., 1895*

PROVISIONAL SPECIFICATION.

# Improvements in or relating to the Treatment of Brewers' and Distillers' Mash and the Saccharine Liquid or Wort Obtained therefrom.

We, ROBERT WHEELER PRESTON of 4 India Buildings, Water Street, Liverpool and JOHN MELLRAY HOGARTH of 20 Pembroke Road, Bootle, both in the County of Lancaster, Distillers, do hereby declare the nature of this invention to be as follows :—

This invention relates to the treatment of brewers' or distillers' mash obtained from vegetable products containing starch and the saccharine liquid or wort obtained therefrom. It consists mainly in separating by suitable means the liquid and solid ingredients of the mash into a perfectly clear wort. This wort is fermented by yeast, and during the process of fermentation, purified air may be blown into the wort, and, after fermentation is complete, the wort is removed and the yeast allowed to separate, the liquid drained off and distilled for spirit, whilst the solid ingredients separated from the mash can be used for cattle food.

In carrying our invention into effect, the plan we prefer is to form the mash tun with a perforated false bottom, and separate the liquid and solid ingredients of the mash in the ordinary way, with this difference however, that we leave the bulk of the grains in the mash tun after each mashing, and pass the liquor which is drawn off from the mash tun, through a filtering arrangement to remove all solid matter from the wort. The grains left in the mash tun are of course subjected to a second mixing, the liquor drawn off and filtered, and the operation repeated until the complete exhaustion of the saccharine and amylaceous substances of the malt is effected. The filtration of the liquor in the manner described gives a perfectly clear wort, which is put with yeast into the fermenting vat and pure atmospheric air admitted. This purified air may be produced by an apparatus in which air is driven by a pump or fan into a vessel by means of a revolving pipe with perforated arms at the bottom. The air is ejected through these perforated arms, rises through the acidified water with which the vessel is partly filled, and from the upper part of this vessel the partially purified air passes into a second vessel by means of a similar revolving tube with perforated arms at the bottom and rises up in a finely divided state through the acidified water from whence the purified air is discharged by a pipe to the backs or coppers. The shafts may revolve at a speed of say 20 to 40 revolutions per minute, but the exact speed can of course be varied to suit special circumstances.

Dated this 31st day of May 1894.

WM. P. THOMPSON & Co.,
Of 6, Lord Street, Liverpool, Patent Agents for the Applicants.

[*Price* 8*d*.]

## COMPLETE SPECIFICATION.

# Improvements in or relating to the Treatment of Brewers' and Distillers' Mash and the Saccharine Liquid or Wort Obtained therefrom.

We, ROBERT WHEELER PRESTON of 4 India Buildings, Water Street, Liverpool and JOHN MELLRAY HOGARTH of 20 Pembroke Road, Bootle, both in the County of Lancaster Distillers, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

This invention relates to the treatment of brewers' or distillers' mash obtained from vegetable products containing starch and the saccharine liquor or wort obtained therefrom. It consists mainly in separating by suitable means the liquid and solid ingredients of the mash into a perfectly clear wort. This wort is fermented by yeast, and during the process of fermentation, purified air may be blown into the wort, and, after fermentation is complete, the wort is removed and the yeast allowed to separate, the liquor drained off and distilled for spirit, whilst the solid ingredients separated from the mash can be used for cattle food.

In carrying our invention into effect, the plan we prefer is to form the mash tun with a perforated false bottom, and separate the liquid and solid ingredients of the mash in the ordinary way, with this difference however, that we leave the bulk of the grains in the mash tun after each mashing, and pass the liquor which is drawn off from the mash tun, through a filtering arrangement to remove all solid matter from the wort. The filtering arrangement employed is of no special construction, any form of press commonly used for filter-pressing beer and yeast in breweries and distilleries serving the purpose, such for instance as the filter presses of Johnson of London. The grains left in the mash tun are of course subjected to a second mixing, the liquor drawn off and filtered, and the operation repeated until the complete exhaustion of the saccharine and amylaceous substances of the malt is effected. The filtration of the liquor in the manner described gives a perfectly clear wort, which is put with yeast into the fermenting vat and pure atmospheric air admitted.

Our apparatus for producing purified air is set forth in the accompanying drawing, in which

Figure 1 is an elevation and

Figure 2 a plan.

In these, A A are vats or tuns of wood saturated with paraffin wax or made of other material proof against strong mineral acids ; B central hollow shaft or tube formed of glass, lead or lead-coated metal or other material, not acted on by the acid employed ; C six arms perforated on the sides, top, bottom or any or all of these ; D D steps or bearings for the shaft ; E space filled with acidulated water ; F space filled with purified air ; G bevel gear for turning shaft B preferably 20 to 40 revolutions a minute ; H a stuffing gland ; I pipe leading from the air pump to the first vessel ; J pipe bringing the air (partially purified in the first chamber) to the second chamber ; K pipe leading the purified air to the wash backs. These vessels are in our experimental apparatus about 6 feet high and 3 feet 6 inches diameter, the acid can be commercial sulphuric acid or diluted with about half its weight of water. Dilute hydrochloric or nitric acid could be substituted in cases where this is found desirable.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is :—

1. The improvement in the treatment of brewers' or distillers' mash and the wort

obtained therefrom, which consists in running off the wort from the grains, filtering it and treating it with yeast, with or without purified air, treating the grains left in the mash to a second mixing, and repeating the operation until sufficient exhaustion of the saccharine and amylaceous material has taken place.

2. The apparatus for purifying air for use in treating brewers' and distillers' wort substantially as described.

Dated this 6th day of December 1894.

WM. P. THOMPSON & Co.,
Of Liverpool, Manchester, Birmingham, and London,
Patent Agents.

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